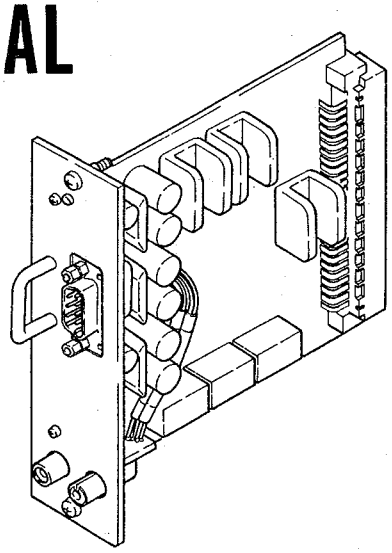
IFB-20

5683

SERVICE MANUAL



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SIGNAL INTERFACE BOARD

SONY®

SECTION 1
GENERAL

The IFB-20 signal interface board is the PC board to be mounted on the PC-1270/1270M signal interface switcher, etc. so that analog RGB and audio signals from a computer, etc. can be input to the PC-1270/1270M, etc.

For the customers in the USA

Warning — This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Important - To insure that the complete system (including this peripheral) is capable of complying with the FCC requirements, it is recommended that the user make sure that the individual equipment of the complete system has a label with one of the following statements.

"This equipment has been tested with a Class A Computing Device and has been found to comply with Part 15 of FCC Rules."

-or-

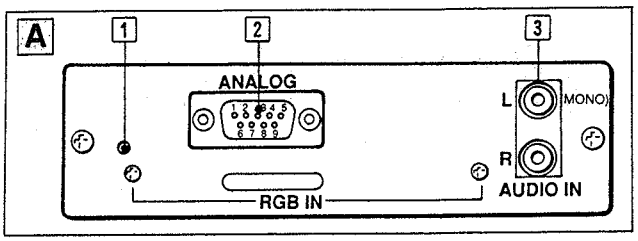
"This equipment complies with the requirements in Part 15 of FCC Rules for a Class A Computing Device."

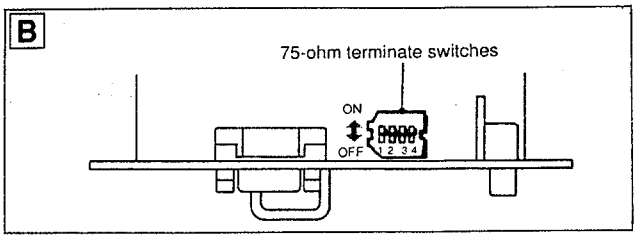
-or equivalent.

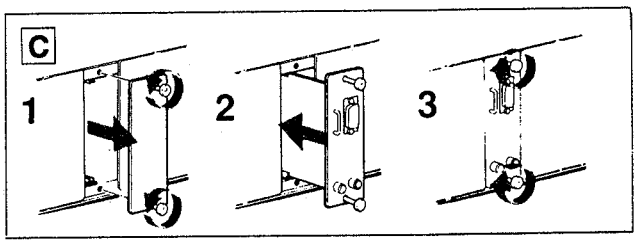
The shielded interface cable recommended in this manual must be used with this equipment in order to comply with the limits for a computing device pursuant to Subpart J of Part 15 of FCC rules.

For the customers in Canada

This apparatus complies with the Class A limits for radio noise emissions set out in Radio Interference Regulations.







Location and Function of Parts A

1 Indicator (red)
Lights up when this board is selected

2 RGB IN ANALOG connector (9-pin)
Accepts analog RGB signal.

Pin assignment

No.	Signal	No.	Signal
1	GND	6	—
2	—	7	—
3	Red 0.7 V ± 3 dB, 75 ohms terminated	8	Horizontal/Composite sync signal input 0.6–8 Vp-p, high impedance
4	Green 0.7 V ± 3 dB, 75 ohms terminated	9	Vertical sync signal input 0.6–8 Vp-p, high impedance
5	Blue 0.7 V ± 3 dB, 75 ohms terminated		

3 AUDIO IN L (MONO)/R (phono jack)
Accepts audio signal. 436 mVrms, impedance 47 kohms.
Connect a monaural audio source to L (MONO).

Setting the 75-ohm Terminate Switches 1–4 B

Normally set all to the ON side.
Set all to the OFF side when the IFB-20 is connected to a monitor and a personal computer with an SIC cable.

Mounting the IFB-20 C

1 Loosen the screws completely and remove the panel.
2 Push in the IFB-20 along the rail.
3 Tighten the screws.
For dismounting the IFB-20, loosen the screws completely and pull it out.

SECTION 2
CIRCUIT DESCRIPTION

2-1. IFB-20 BOARD

IFB-20 board is the signal input board provided with R, G, B, input of D-Sub 9-pin.
SW1 is 75 Ω termination ON/OFF switch for R, G, B, signal.

1. Video Buffer

The signal input to the R, G and B connectors are terminated with 75Ω terminator and is input to the video buffer U1, U2 and U3, where, with the 100 MHz band width, the voltage gain is controlled to 1 by R14, R15 and R16, respectively.
Then the R, G and B signals output from the video buffer pass through the relays RL1, RL2 and RL3 and are output from Pins (21-a•c), (25-a•c) and (29-a•c) of 64-pin connector.

2. Sync Signal Interface

The signals input to HD and VD connectors are input to the base of Q201 and Q202. Since a +4.5V bias is applied to Q201 and Q202, input 0 level is level-shifted to +4.5V. The positive peak voltage are charged to Q205/Q206 emitter and the negative voltage to Q203/Q204. The intermediate DC voltage of upper and lower peaks of HD and VD are input to Pins ③ and ⑤ of UA201. The HD and VD output signals passed through Q201 and Q202 is applied to Pins ② and ⑥ of UL201, where DC voltage at Pins ① and ⑦ are compared with the signal levels applied to Pins ② and ⑥. Therefore high level is output from Pins ③ and ⑤ when the signal level is higher than DC voltage, low level when lower.

3. Audio

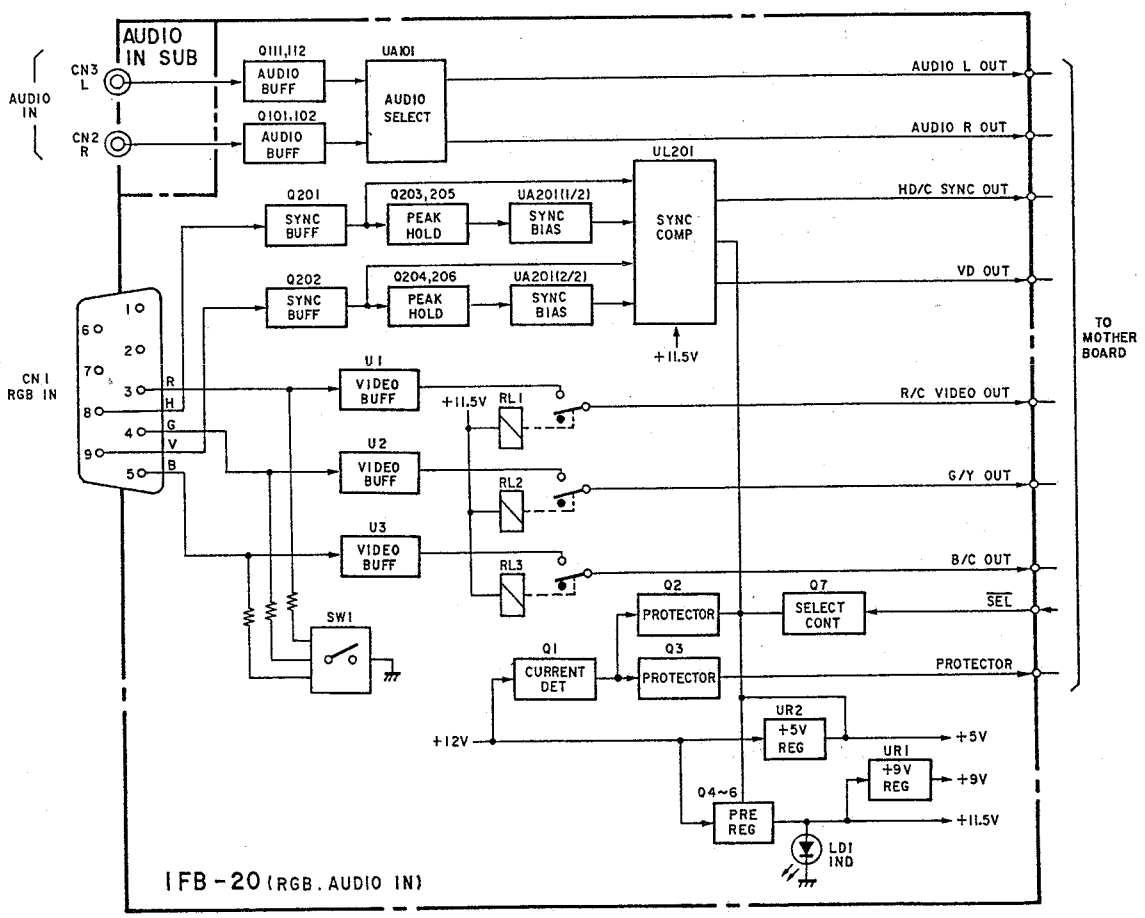
Input the audio signal from L (monaural) and R connectors. When no plug is connected to R connector, L (monaural) and R line is shorted internally by the switch built-in the R terminal. Input signals pass through the buffers composed of Q101/Q102 and Q111/Q112, then are output from the analog switch UA101.

4. Power Supply

Power supply voltage is supplied from Pin (4-a•c) of the 64-pin connector. When $\overline{SEL}$ signal input from Pin (19-c) becomes low, +12V and +9V voltages are supplied to the circuit via Q6.
Q4, Q5 and Q6 are the regulators to stabilize the power supply voltage to approximately 11.5V. Q1, Q2 and Q3 form a current detection-type protector. When a current in excess of 600 mA flows in R19, Q1 turns on and a current flows into bases of Q2 and Q3. Q3 output the protector signal to peripheral block from Pin (2-a). Q2 turns Q6 off to prevent a current from flowing into the circuit.

SECTION 3
DIAGRAMS

3-1. BLOCK DIAGRAM



3-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS — CONDUCTOR SIDE —

Note:

- All capacitors are in μF unless otherwise noted. p: $\mu\mu$F
  50 WV or less are not indicated except for electrolytic and tantalums.
  All electrolytics are in 50V unless otherwise noted.
- All resistors are in ohms.
  kΩ =1000Ω , MΩ =1000KΩ
- Indication of resistance, which does not have one for rating electrical power is as follows.

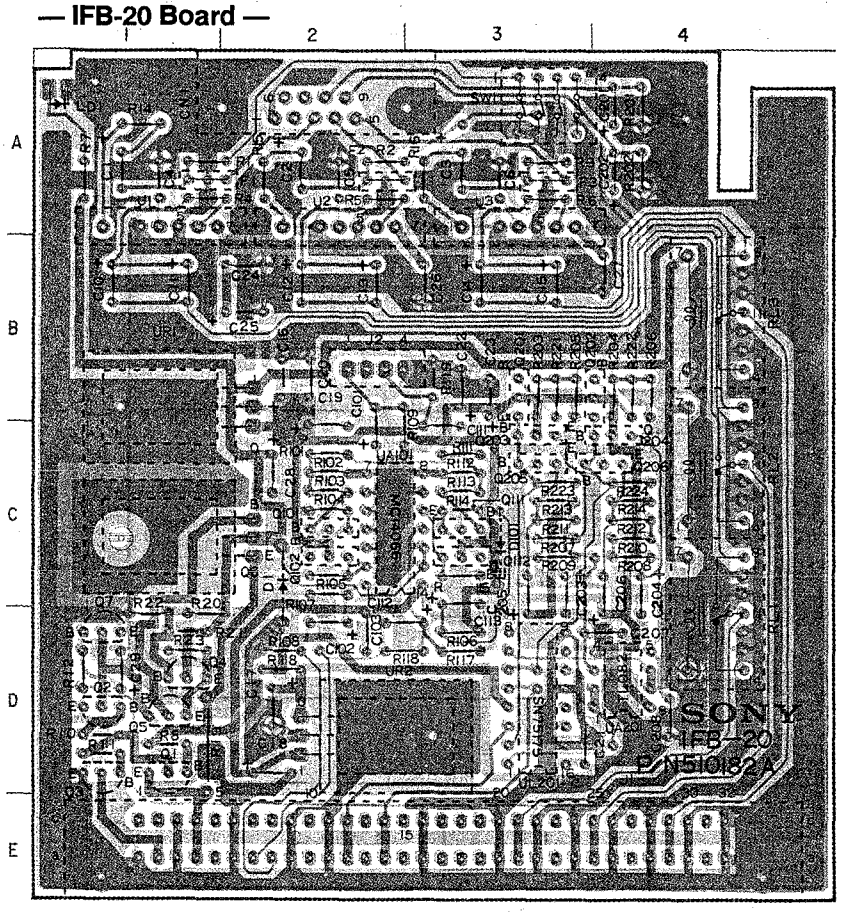
  Pitch: 5 mm
  Rating electrical power: 1/4W

- : nonflamable resistor.

Readings are taken with a color-bar signal input.
Readings are taken with a 10 MΩ digital maltimeter.
Voltage are dc with respect to ground unless otherwise noted.
Voltage variations may be neted due to normal production tolerances.
All voltages are in V.
Circled numbers are waveform references.
: B+ bus.

IFB-20 (ANALOG RGB IN 9-PIN) AUDIO IN SUB

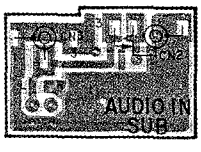
— IFB-20 Board —



IFB-20 BOARD

IC	
U1	A-1
U2	A-2
U3	A-3
UA101	C-2
UA201	D-4
UL201	D-3
UR2	D-2
TRANSISTOR	
Q1	D-1
Q2	D-1
Q3	D-1
Q4	D-1
Q5	D-1
Q6	C-2
Q7	D-1
Q101	C-2
Q102	C-2
Q111	C-3
Q112	C-3
Q201	B-3
Q202	B-4
Q203	C-3
Q204	C-4
Q205	C-3
Q206	C-4
DIODE	
D1	C-2
D101	C-3
LD1	A-1

— AUDIO IN SUB Board —



IFB-20
(ANALOG RGB IN 9-PIN)

AUDIO IN SUB

RGB IN

BOARD NO. : P/N510172

J1		
1	GND	
2	PROTECTOR	
3	GND	
4	+12B	
5		
6	GND	
7	AUDIO L OUT	
8	AUDIO R OUT	
9	GND	
10		
11	GND	
12	HD/CSYNC OUT	
13	HD/CSYNC IN	
14	VD OUT	
15	VD IN	
16	GND	
17		
18		
19	$\overline{SEL}$	
20	GND	
21	R/CVIDEO OUT	
22	GND	
23	R/CVIDEO IN	
24	GND	
25	G/Y OUT	
26	GND	
27	G/Y IN	
28	GND	
29	B/C OUT	
30	GND	
31	B/C IN	
32	GND	

TO MOTHER BOARD

(1) 4Vp-p (H)

(2) 4Vp-p (V)

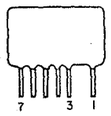
(3) 1.2Vp-p (H)

(4) 1.2Vp-p (H)

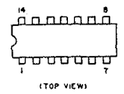
(5) 1.2Vp-p (H)

3-3. SEMICONDUCTORS

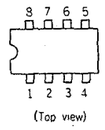
4C0040



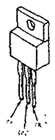
MC14066BCP



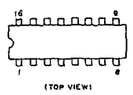
NJM082D
TL082CP



NJM78M05FA
NJM78M09A
RC78M05A
RC78M09FA

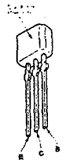


SN75175N



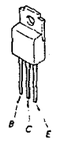
2SA1175
2SC2785

2SA950



2SA952

2SB1016

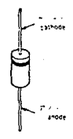


2SB595

2SC2120

2SC2603

10E2
1N4001
1S1588

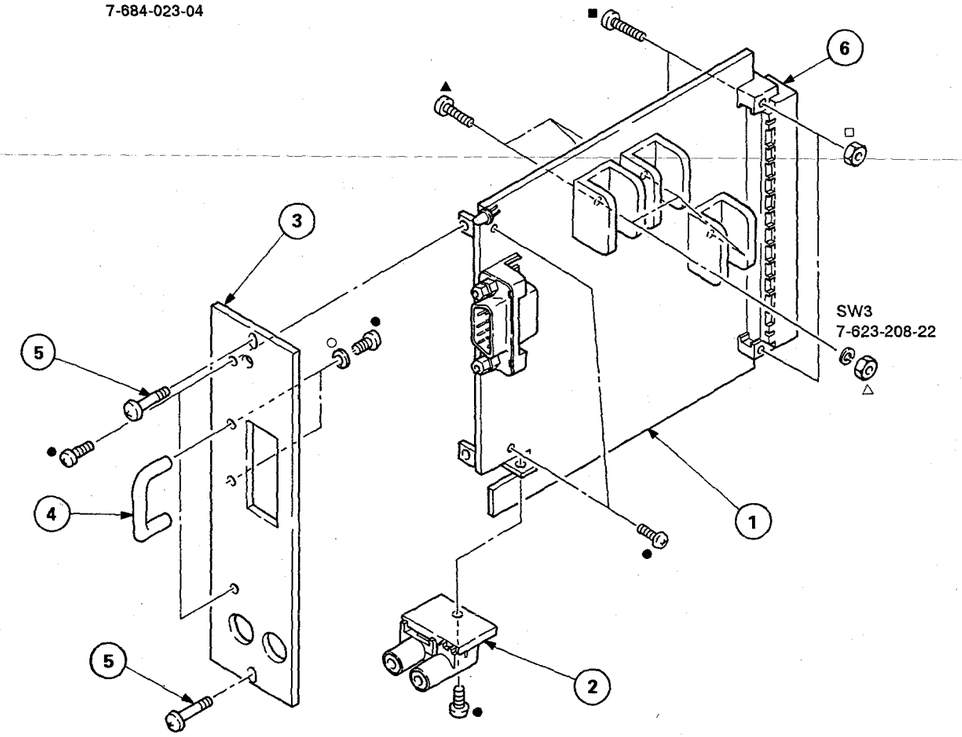


VR3668S

SECTION 4
EXPLODED VIEW

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " ★ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

●	P2.6×6	7-621-284-20
■	B2.6×10	7-621-773-87
○	SW2.6	7-623-207-22
□	N2.6	7-622-207-05
▲	B3×10	7-682-149-01
△	N3	7-684-023-04



REF.NO	PART NO	DESCRIPTION	REMARK
1	★9-996-222-01	IFB-20 BOARD, COMPLETE	
2	★9-996-802-01	AUDIO-IN SUB BOARD, COMPLEATE	
3	9-996-223-01	PANEL(20), IF	
4	9-996-123-01	HANDLE	
5	4-396-203-01	+B 3×12	
6	1-568-981-11	MALE CONNECTOR 64P	

SECTION 5
ELECTRICAL PARTS LIST

IFB-20

NOTE:

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS
- All resistors are in ohms
- F : nonflammable

When indicating parts by reference number, please include the board name.

CAPACITORS
- MF : μF, PF : μμF

COILS
- MMH : mH, UH : μH

- ※ : Selected to yield optimum performance.
- There are some cases the reference number on one board overlaps on the other board. Therefore, when ordering parts by the reference number, please include the board name.

REF.NO.	PART NO.	DESCRIPTION				REMARK
	*9-996-222-01	IFB-20 BOARD, COMPLETE				
		**********				
		<CAPACITOR>				
C1	1-126-103-11	ELECT	470MF	20%	10V	
C2	1-126-103-11	ELECT	470MF	20%	10V	
C3	1-126-103-11	ELECT	470MF	20%	10V	
C10	1-124-559-51	ELECT	1000MF	20%	10V	
C11	1-124-559-51	ELECT	1000MF	20%	10V	
C12	1-124-559-51	ELECT	1000MF	20%	10V	
C13	1-124-559-51	ELECT	1000MF	20%	10V	
C14	1-124-559-51	ELECT	1000MF	20%	10V	
C15	1-124-559-51	ELECT	1000MF	20%	10V	
C17	1-123-356-00	ELECT	10MF	20%	16V	
C18	1-123-356-00	ELECT	10MF	20%	16V	
C19	1-123-356-00	ELECT	10MF	20%	16V	
C20	9-996-186-01	CERAMIC	0.1MF		50V	
C21	9-996-186-01	CERAMIC	0.1MF		50V	
C22	9-996-186-01	CERAMIC	0.1MF		50V	
C24	9-996-186-01	CERAMIC	0.1MF		50V	
C28	1-123-356-00	ELECT	10MF	20%	16V	
C29	1-126-101-11	ELECT	100MF	20%	10V	
C101	1-124-252-00	ELECT	0.33MF	20%	50V	
C102	1-123-330-00	ELECT	22MF	20%	16V	
C103	9-996-186-01	CERAMIC	0.1MF		50V	
C111	1-124-252-00	ELECT	0.33MF	20%	50V	
C112	1-123-330-00	ELECT	22MF	20%	16V	
C113	1-123-356-00	ELECT	10MF	20%	16V	
C201	1-123-369-00	ELECT	4.7MF	20%	25V	
C202	1-123-369-00	ELECT	4.7MF	20%	25V	
C203	1-123-356-00	ELECT	10MF	20%	16V	
C204	1-123-356-00	ELECT	10MF	20%	16V	
C205	1-123-356-00	ELECT	10MF	20%	16V	
C206	1-123-356-00	ELECT	10MF	20%	16V	
C207	9-996-186-01	CERAMIC	0.1MF		50V	
C208	9-996-186-01	CERAMIC	0.1MF		50V	
		<CONNECTOR>				
CN1	*9-996-226-01	D SUB CONNECTOR, 9P				
		<DIODE>				
DI	8-719-200-02	DIODE 10E2				
DI01	8-719-820-59	DIODE 1S1588				
LD1	9-996-110-01	DIODE VR3668S				
		<JACK>				
J1	*1-568-981-11	MALE CONNECTOR 64P				
J2	*1-564-519-11	PLUG, CONNECTOR 4P				
		<COIL>				
L1	1-408-877-00	INDUCTOR (LF-8S)				
L2	1-408-877-00	INDUCTOR (LF-8S)				
L3	1-408-877-00	INDUCTOR (LF-8S)				
		<TRANSISTOR>				
Q1	8-729-195-23	TRANSISTOR 2SA952				
Q2	8-729-212-02	TRANSISTOR 2SC2120-Y				
Q3	8-729-212-02	TRANSISTOR 2SC2120-Y				
Q4	8-729-212-02	TRANSISTOR 2SC2120-Y				
Q5	8-729-212-02	TRANSISTOR 2SC2120-Y				
Q6	8-729-202-99	TRANSISTOR 2SB1016-Y				
Q7	8-729-212-02	TRANSISTOR 2SC2120-Y				
Q101	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q102	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q111	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q112	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q201	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q202	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q203	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q204	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q205	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q206	8-729-119-76	TRANSISTOR 2SA1175-HFE				
		<RESISTOR>				
R1	1-247-804-11	CARBON	75	5%	1/4W	
R2	1-247-804-11	CARBON	75	5%	1/4W	
R3	1-247-804-11	CARBON	75	5%	1/4W	
R4	1-247-804-11	CARBON	75	5%	1/4W	
R5	1-247-804-11	CARBON	75	5%	1/4W	
R6	1-247-804-11	CARBON	75	5%	1/4W	
R7	1-249-423-11	CARBON	3.3K	5%	1/4W	
R8	1-249-419-11	CARBON	1.5K	5%	1/4W	
R10	1-249-419-11	CARBON	1.5K	5%	1/4W	
R11	1-249-419-11	CARBON	1.5K	5%	1/4W	
R12	1-249-429-11	CARBON	10K	5%	1/4W	
R14	1-249-408-11	CARBON	180	5%	1/4W	
R15	1-249-408-11	CARBON	180	5%	1/4W	
R16	1-249-408-11	CARBON	180	5%	1/4W	
R18	1-249-419-11	CARBON	1.5K	5%	1/4W	
R19	1-249-474-11	CARBON	1	5%	1/2W	F
R20	1-249-428-11	CARBON	8.2K	5%	1/4W	
R22	1-249-426-11	CARBON	5.6K	5%	1/4W	

IFB-20 AUDIO IN SUB

REF.NO.	PART NO.	DESCRIPTION				REMARK
R23	1-249-417-11	CARBON	1K	5%	1/4W	
R101	1-247-891-00	CARBON	330K	5%	1/4W	
R102	1-247-891-00	CARBON	330K	5%	1/4W	
R103	1-249-402-11	CARBON	56	5%	1/4W	
R104	1-249-433-11	CARBON	22K	5%	1/4W	
R105	1-249-418-11	CARBON	1.2K	5%	1/4W	
R106	1-249-435-11	CARBON	33K	5%	1/4W	
R107	1-247-901-11	CARBON	820K	5%	1/4W	
R108	1-247-901-11	CARBON	820K	5%	1/4W	
R109	1-247-891-00	CARBON	330K	5%	1/4W	
R111	1-247-891-00	CARBON	330K	5%	1/4W	
R112	1-247-891-00	CARBON	330K	5%	1/4W	
R113	1-249-402-11	CARBON	56	5%	1/4W	
R114	1-249-433-11	CARBON	22K	5%	1/4W	
R115	1-249-418-11	CARBON	1.2K	5%	1/4W	
R117	1-247-901-11	CARBON	820K	5%	1/4W	
R118	1-247-901-11	CARBON	820K	5%	1/4W	
R119	1-247-891-00	CARBON	330K	5%	1/4W	
R201	1-249-417-11	CARBON	1K	5%	1/4W	
R202	1-249-417-11	CARBON	1K	5%	1/4W	
R203	1-249-429-11	CARBON	10K	5%	1/4W	
R204	1-249-429-11	CARBON	10K	5%	1/4W	
R205	1-249-429-11	CARBON	10K	5%	1/4W	
R206	1-249-429-11	CARBON	10K	5%	1/4W	
R207	1-249-441-11	CARBON	100K	5%	1/4W	
R208	1-249-441-11	CARBON	100K	5%	1/4W	
R209	1-249-437-11	CARBON	47K	5%	1/4W	
R210	1-249-437-11	CARBON	47K	5%	1/4W	
R211	1-249-437-11	CARBON	47K	5%	1/4W	
R212	1-249-437-11	CARBON	47K	5%	1/4W	
R213	1-249-441-11	CARBON	100K	5%	1/4W	
R214	1-249-441-11	CARBON	100K	5%	1/4W	
R221	1-249-402-11	CARBON	56	5%	1/4W	
R222	1-249-402-11	CARBON	56	5%	1/4W	
R223	1-249-417-11	CARBON	1K	5%	1/4W	
R224	1-249-417-11	CARBON	1K	5%	1/4W	
		<RELAY>				
RL1	1-515-757-11	RELAY				
RL2	1-515-757-11	RELAY				
RL3	1-515-757-11	RELAY				
		<SWITCH>				
SW1	1-570-598-11	DIP SWITCH				
		<IC>				
U1	9-996-108-01	IC 4C0040				
U2	9-996-108-01	IC 4C0040				
U3	9-996-108-01	IC 4C0040				
UA101	8-759-000-49	IC MC14066BCP				
UA201	8-759-990-82	IC TL082CP				
UL201	9-996-109-01	IC SN75175				
UR1	8-759-982-34	IC RC78M09FA				
UR2	8-759-982-31	IC RC78M05FA				

****

*9-996-802-01 AUDIO IN SUB BOARD, COMPLETE

****

9-996-124-01 AUDIO IN CABLE ASSY

REF.NO.	PART NO.	DESCRIPTION	REMARK
		<CONNECTOR>	
CN2	9-996-115-01	PIN JACK (R WITH SWITCH)	
CN3	9-996-116-01	PIN JACK (L WITHOUT SWITCH)	

****

ACCESSORIES AND PACKING MATERIALS

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PART NO.	DESCRPTION	REMARK
*3-703-263-07	BAG, CONDUCTIVE	
3-751-190-01	MANUAL, INSTRUCTION	
*9-996-220-01	SPACER	
*9-996-872-01	INDIVIDUAL CARTON	

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